II. SPECIFICATION AMENDMENTS

Please replace the paragraph/section beginning on page 2, line 25 through page 3, line 5 as rewritten below:

Another technique for evening out the inhomogeneous brightness, which changes as a function of location as shown in Figure 1C, is to change the local outcoupling efficiency η as a function of distance by placing dots at which the light is scattered or reflected on the top or bottom of the light pipe. The dots are, for instance, small lenses, which are located at long intermediate distances in the first end of the light source and at shorter intermediate distances in the other end so that there is a smaller difference in brightness B between the first and second end of the display. Figure 2 illustrates a known arrangement like that described above for illuminating a flat-panel display 207 with a light pipe 209, in which arrangement the lower surface of the light pipe 209 is covered with lenses. The amount of light 208 is greater in the first end of the light pipe 209 near the light source L2 than in the second, opposite end. Because the purpose is to illuminate the display more uniformly, and the local outcoupling efficiency η of the light depends on the local number of scattering and/or reflecting lenses, it is advantageous to make the density of the optical elements smaller near the light source than far from it. To improve the lighting still more, a reflector 2010 can be used to return unfavorably directed light back to the direction of the display 207.

Please replace the paragraph/section beginning on page 5, line 9 through page 5, line 24 as rewritten below:

Figure 3A shows how the illumination of a flat-panel display ~~301~~ 311 can be arranged by means of a light pipe ~~303~~ 313 according to a preferred embodiment of the invention. The light pipe ~~303~~ 313 has a binarized diffraction surface, in which the geometrical properties of the surface profile change when the distance from the light source increases. Locally, the geometrical changes are small as compared to the adjacent formations, and they approximate at a certain accuracy a grid structure, in which the grid constant changes as a function of location. The light ~~302~~ 312 is equally strong throughout the whole diffractive light pipe element ~~303~~ 313, although individual rays of light ~~302~~ 312 are stronger at the first end ~~303A~~ 313A of the light pipe ~~303~~ 313 close to the light source L3 than at the opposite end ~~303B~~ 313B. The local outcoupling efficiency η of the diffraction element ~~303C~~ 313C has been changed by utilizing its dependence on the fill factor c. In addition, it is advantageous for the invention to use, for instance, a Lambertain white reflector ~~304~~ 314 below the light pipe ~~303~~ 313 to reflect or scatter the part of the light which passed through the bottom of the light pipe ~~303~~ 313 in the wrong direction back to the light pipe ~~303~~ 313 to be used for the illumination of the display ~~301~~ 311.

III. Claims

1. (Currently Amended) A light pipe comprising:

a first surface, said surface including surface formation patterns having diffractive properties for coupling light out from the light pipe to provide backlighting of a flat-panel display, said surface formation patterns comprising uniform, mutually different areas distributed ~~on~~over said first surface;

wherein the areas comprise first pixel-like formations having a first orientation and second pixel-like formations having a second orientation being different than that of the first pixel-like formations orientation, said pixel-like formations being arranged to diffract light for producing uniform lighting and to produce substantially uniform light out from the light pipe regardless of the distance from a light input end of the light pipe.

2. (Previously Presented) A light pipe according to claim 1 wherein

said patterns comprise parallel elongated surface formations,

said patterns comprise a first uniform area, in which a characteristic parameter has a first value;

said patterns comprise a second uniform area, in which said characteristic parameter has a second value, which differs from said first value;

and the surface formations in said first area differ from the surface formations in said second area with regard to said characteristic parameter, and said characteristic parameter is at least one of the following: orientation of the pattern, period length, fill factor, fill ratio, height, characteristic degree of modification, angle of deflection between the elongated surface formations of the pattern.

3.(Previously Presented) A light pipe according to claim 2, wherein the value of at least one characteristic parameter depends on a value defined in relation to the light source.

4. (Previously Presented) A light pipe according to claim 2, wherein the elongated patterns of the surface formations change gradually from first shapes at a first end of the pattern at a light source side to other shapes at an opposite side of said pattern at another end in a manner depending on a quantity, which is dependent on a relation to the light source.

5. (Previously Presented) A light pipe according to claim 2, wherein a local plane in the area of a pattern, which

plane is determined by peaks of the surface formations of the patterns, is at an angle in relation to a plane determined by the first surface of the light pipe.

6. (Previously Presented) A light source according to claim 2, wherein at least one of the patterns has a fill ratio, and the fill ratio increases when moving from the end at the side of the light source to the opposite end of the light pipe.

7. (Previously Presented) A light source according to claim 1, wherein distribution of the patterns depends on a quantity which is dependent on a relation to the light source.

8. (Previously Presented) A light pipe according to claim 1, wherein said first surface is on a side of the light pipe, which is closest to the display.

9. (Previously Presented) A light pipe according to claim 1, wherein elongated shapes of surface formations in the patterns are repeated in a uniform area of the surface of the light pipe.

10. (Previously Presented) A light source according to claim 1, wherein at least one of the patterns has a fill ratio, the fill ratio increases along a central line of the light pipe from an end at the side of the light source to an opposite end of the light pipe, and the pattern has elongated formations, which are perpendicular to the central line.

11. (Previously Presented) A light source according to claim 1, wherein the pattern has a fill ratio between 0.2 and 0.5.

12. (Previously Presented) A light pipe according to claim 1, wherein at least one of the patterns has a fill ratio, the fill ratio increases as measured along a straight line when moving away from the light source, and the pattern has elongated surface formations, which are bowed, whereby the midpoint defined by the dimensions of the light source is located essentially at a focal point characterizing the bow.

13. (Previously Presented) A light pipe according to claim 2, wherein at least one pattern has a diffractive structure with a period length between 1.5 and 3.5 μm.

14. (Previously Presented) A light pipe according to claim 1, wherein depth and/or height of elongated surface formations of the surface is between 0.3 and 0.7 μm.

15. (Previously Presented) A light pipe according to claim 1, wherein the light pipe has a polygonal shape, with at least one angle between adjacent sides, which differs substantially from 90°.

16. (Original) A light pipe according to claim 1, wherein the light pipe has fluorescent and/or phosphorescent properties.

17. (Currently Amended) A light pipe arrangement comprising:
a light source,

a display,

a light pipe, and

a base plate of the light pipe,

wherein

the light pipe is limited by a first surface, said surface including surface formation ~~comprises~~ patterns, said patterns have diffractive properties for coupling the light out from the light pipe to provide backlighting of the display, said surface formation patterns comprise uniform, mutually different areas with a distribution over ~~on~~ said first surface; and

wherein the areas comprise first pixel-like formations having a first orientation and second pixel-like formations having a second orientation being different than that of the first pixel-like formations orientation, said pixel-like formations being arranged to diffract the light for producing uniform lighting and to produce substantially uniform light out from the light pipe regardless of the distance from a light input end of the light pipe.

18. (Previously Presented) A light pipe arrangement according to claim 17, comprising two further light sources.

19. (Previously Presented) A light pipe according to claim 1, wherein the diffractive patterns have a geometry which is varied with position on said light pipe so that brightness of light is constant with position along said light pipe.

20. (Previously Presented) A light pipe according to claim 1, wherein the diffractive patterns have a fill factor which is varied with position on said light pipe so that brightness of light is constant with position along said light pipe.

21. (Previously Presented) A light pipe arrangement according to claim 17, wherein the diffractive patterns have a geometry which is varied with position on said light pipe so that brightness of light is constant with position along said pipe.

22. (Previously Presented) A light pipe arrangement according to claim 17, wherein the diffractive patterns have a fill factor which is varied with position on said light pipe so that brightness of light is constant with position along said pipe.

23. - 29. (Cancelled)

30. (New) A light pipe according to claim 1, wherein the surface formation patterns are manufactured directly on the first surface.

31. (New) A light pipe arrangement according to claim 17, wherein the surface formation patterns are manufactured directly on the first surface.

32. (New) A light pipe comprising:

a first surface, said surface including patterns having diffractive properties for coupling light out from the light pipe to provide backlighting of a flat-panel display, said patterns comprising uniform, mutually different areas distributed on said first surface;

wherein the areas comprise first pixel-like formations having a first orientation and second pixel-like

formations having a second orientation being different than that of the first pixel-like formations orientation, said pixel-like formations being arranged to diffract light for producing uniform lighting and to produce substantially uniform light out from the light pipe regardless of the distance from a light input end of the light pipe;

said patterns comprise parallel elongated surface formations, the height and width of which differ from the environment,

said patterns comprise a first uniform area, in which a characteristic parameter has a first value;

said patterns comprise a second uniform area, in which said characteristic parameter has a second value, which differs from said first value;

the surface formations in said first area differ from the surface formations in said second area with regard to said characterisitc parameter, and said characteristic parameter is at least one of the following: orientation of the pattern, period length, fill factor, fill ratio, height, characteristic degree of modification, angle of deflection between the elongated surface formations of the pattern; and

a local plane in the area of a pattern, which plane is determined by peaks of the surface formations of the

patterns, is at an angle in relation to a plane determined by the first surface of the light pipe.

33. (New) A light pipe comprising:

a first surface, said surface including patterns having diffractive properties for coupling light out from the light pipe to provide backlighting of a flat-panel display, said patterns comprising uniform, mutually different areas distributed on said first surface;

wherein the areas comprise first pixel-like formations having a first orientation and second pixel-like formations having a second orientation being different than that of the first pixel-like formations orientation, said pixel-like formations being arranged to diffract light for producing uniform lighting and to produce substantially uniform light out from the light pipe regardless of the distance from a light input end of the light pipe;

said patterns comprise parallel elongated surface formations,

said patterns comprise a first uniform area, in which a characteristic parameter has a first value;

said patterns comprise a second uniform area, in which said characteristic parameter has a second value, which differs from said first value;

the surface formations in said first area differ from the surface formations in said second area with regard to said characteristic parameter, and said characteristic parameter is at least one of the following: orientation of the pattern, period length, fill factor, fill ratio, height, characteristic degree of modification, angle of deflection between the elongated surface formations of the pattern; and

at least one pattern has a diffractive structure with a period length between 1.5 and 3.5 μm.

34. (New) A light pipe comprising:

a first surface, said surface including patterns having diffractive properties for coupling light out from the light pipe to provide backlighting of a flat-panel display, said patterns comprising uniform, mutually different areas disctributed on said first surface;

wherein the areas comprise first pixel-like formations having a first orientation and second pixel-like formations having a second orientation being different than that of the first pixel-like formations orientation, said pixel-like formations being arranged to diffract light for producing uniform lighting and to produce substantially uniform light

out from the light pipe regardless of the distance from a light input end of the light pipe; and

the depth and/or height of elongated surface formations of the surface is between 0.3 and 0.7 μm.

35. (New) A light pipe comprising:

a first surface, said surface including patterns having diffractive properties for coupling light out from the light pipe to provide backlighting of a flat-panel display, said patterns comprising uniform, mutually different areas distributed on said first surface;

wherein the areas comprise first pixel-like formations having a first orientation and second pixel-like formations having a second orientation being different than that of the first pixel-like formations orientation, said pixel-like formations being arranged to diffract light for producing uniform lighting and to produce substantially uniform light out from the light pipe regardless of the with distance from a light input end of the light pipe; and

the light pipe has a polygonal shape, with at least one angle between adjacent sides, which differs substantially from 90°.